

Part I

The Prologue to Graphic Design

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The visual message from prehistory through the medieval era

- 1 The Invention of Writing
- 2 Alphabets
- 3 The Asian Contribution
- 4 Illuminated Manuscripts

1 2 3 4

The Invention of Writing

- c 15,000–10,000 BCE** Cave paintings at Lascaux
- c 3600 BCE** Blau monument combines images and early writing
- c 3500 BCE** Sumerians settle in Mesopotamia
- c 3200 BCE** Menes, first pharaoh, unites Egypt
- c 3100 BCE** Early Sumerian pictographic scripts on clay tablets
- c 3100 BCE** King Zet's ivory tablet, earliest Egyptian pictographic writing
- c 2900 BCE** Early cylinder seals
- c 2750 BCE** Formal land-sale contracts written in cuneiform
- c 2600 BCE** Early surviving papyrus manuscripts
- c 2500 BCE** Wedge-shaped cuneiform
- c 2345 BCE** Pyramid texts in tomb of Unas
- c 1792–1750 BCE** Law Code of Hammurabi
- c 1739 BCE** Scarab of Ikhnaton and Nefertiti
- c 1500 BCE** Hieratic scripts
- c 1420 BCE** Papyrus of Ani
- c 1300 BCE** Early Book of the Dead papyrus scrolls
- c 1100 BCE** Iron widely used for weapons and tools
- c 600 BCE** Nebuchadnezzar builds the Tower of Babel
- c 400 BCE** Demotic script
- 332–330 BCE** Alexander the Great conquers Egypt
- c 197 BCE** Rosetta Stone

Alphabets

- c 2000 BCE** Early Cretan pictographs, Phaistos Disk
- c 1500 BCE** Ras Shamra script
- c 1000 BCE** Early Greek alphabet
- c 850 BCE** Aramaic alphabet
- 516 BCE** Israelites return from Babylonian exile
- 447–432 BCE** Parthenon built in Athens
- 429 BCE** Sophocles' tragedy *Oedipus Rex*
- 323 BCE** Alexander the Great dies in Babylon
- 300 BCE** Euclid's geometry
- c 190 BCE** Parchment used for manuscripts
- 44 BCE** Julius Caesar assassinated
- 29 BCE** Vergil's *Georgics*
- c 100 CE** Pompeian wall writing
- c 114 CE** Trajan's Column
- c 250 CE** Greek uncials
- c 200–500 CE** Roman square capitals and rustic capitals
- c 500 CE** Early Arabic alphabet
- c 1000 CE** Naskhi becomes dominant Arabic alphabet
- 1446 CE** Hangul, Korean alphabet

5000 BCE–100 BCE

2000 BCE–1500 CE

The Asian Contribution

- c 1800 BCE** **Legendary Cangjie invents writing**
- c 1500 BCE** **Oracle bone writing**

- 551 BCE Confucius is born
- c 528 BCE Siddhartha Gautama becomes the Buddha
- c 221 BCE Shihuangdi unites China: the Great Wall underway
- c 250 BCE** **Small-seal calligraphy**

- 105 CE** **Cai Lun invents paper**
- c 165 CE** **Confucian classics carved in stone**
- c 200 CE** **Regular-style calligraphy**
- c 300 CE** **Chops are used as identifying seals; chops used in Han dynasty**
- c 770 CE** **Early datable Chinese relief printing; printed Buddhist charms**
- 868 CE** **Diamond Sutra**

- c 1000 CE** **Chinese calligraphy printed with perfection**
- c 1000 CE Gunpowder in use in China
- c 1040 CE** **Pi Sheng invents movable type in China**
- c 1150 CE Compass is invented

2000 BCE–1200 CE

Illuminated Manuscripts

- 330 CE Constantine moves Roman capital to Constantinople
- c 425 CE** **Vatican Vergil**
- c 500 CE** **Uncial lettering flourishes**
- 570 CE Birth of Muhammad

- c 600 CE** **Insular script**
- c 680 CE** **Book of Durrow**
- c 698 CE** **Lindisfarne Gospels**

- c 751 CE** **Arabs learn papermaking from Chinese prisoners**
- 781 CE** **Alcuin establishes school at Aachen; Caroline minuscules are developed**

- c 800 CE** **Book of Kells, Coronation Gospels**
- 800 CE Charlemagne crowned emperor

- 1095–99 CE First Crusade
- 1163 CE Notre Dame Cathedral begun in Paris
- 1209 CE Cambridge University founded
- c 1265 CE** **Douce Apocalypse**
- c 1265 CE Marco Polo travels to China
- 1215 CE King John signs Magna Carta
- c 1300 CE** **Ormesby Psalter**
- c 1320 CE Firearms used in Europe
- c 1387 CE Chaucer begins *The Canterbury Tales*
- c 1413–16 CE** ***Les très riches heures du duc de Berry***
- c 1450 CE** **Printing with movable type in Germany**
- c 1478 CE** **Washington Haggadah**

300 CE–1500 CE

The Invention of Writing



1-1

1-1. Cave painting from Lascaux, c. 15,000–10,000 BCE. Random placement and shifting scale signify prehistoric people's lack of structure and sequence in recording their experiences.

It is not known precisely when or where *Homo sapiens*, our modern species of the lineage of conscious, thinking creatures, emerged. As the search for our prehistoric origins continues, the early innovations of our ancestors have been pushed back further in time. It is believed that we evolved from a species that lived in the southern part of Africa. These early hominids ventured out onto the grassy plains and into caves as the forests in that part of the world slowly disappeared. In the tall grass, the hominids began to stand erect. Perhaps this adaptation was a result of the need to watch for predators, to help discourage enemies by increasing the hominids' apparent size, or to hold branches as weapons.

In any event, the hand developed an ability to carry food and hold objects. Found near Lake Turkana in Kenya, a nearly three-million-year-old stone that had been sharpened into an implement proves the thoughtful and deliberate development of a technology—a tool. Early shaped stones may have been used to dig for roots or to cut away flesh from dead animals for food. While we can only speculate about the use of early tools, we know that they mark a major step in the human species' immense journey from primitive origins toward a civilized state.

A number of quantum leaps provided the capacity to organize a community and gain some measure of control over human destiny. Speech—the ability to make sounds in order to communicate—was an early skill developed by the species on the long evolutionary trail from its archaic beginnings. Writing is the visual counterpart of speech. Marks, symbols, pictures, or letters drawn or written upon a surface or substrate became a graphic counterpart of the spoken word or unspoken thought. The limitations of speech include the fallibility of human memory and an immediacy of expression that cannot transcend time and place. Until the electronic age, spoken words vanished without a trace, while written words remained. The invention of writing brought people the luster of civilization and made it possible to preserve hard-won knowledge, experiences, and thoughts.

The development of writing and visible language had its earliest origins in simple pictures, for a close connection exists between the drawing of pictures and the marking of writing.

Both are natural ways of communicating ideas, and early people used pictures as an elementary way to record and transmit information.

Prehistoric visual communications

Early human markings found in Africa are over two hundred thousand years old. From the early Paleolithic to the Neolithic period (35,000 to 4000 BCE), early Africans and Europeans left paintings in caves, including the Lascaux caves in southern France (Fig. 1-1) and Altamira in Spain. Black was made from charcoal, and a range of warm tones, from light yellows through red-browns, were made from red and yellow iron oxides. This palette of pigments was mixed with fat as a medium. Images of animals were drawn and painted upon the walls of these former subterranean water channels occupied as a refuge by prehistoric men and women. Perhaps the pigment was smeared onto the walls with a finger, or a brush was fabricated from bristles or reeds. This was not the beginning of art as we know it. Rather, it was the dawning of visual communications, because these early pictures were made for survival and for utilitarian and ritualistic purposes. The presence of what appear to be spear marks in the sides of some of these animal images indicates that they were used in rites designed to gain power over animals and success in the hunt.

Abstract geometric signs, including dots, squares, and other configurations, are intermingled with the animals in many cave paintings. Whether they represent fabricated objects or are protowriting is not known, and never will be, because they were made before the beginning of recorded history (the five-thousand-year period during which people have recorded in writing a chronicle of their knowledge of facts and events). The animals painted in the caves are pictographs—elementary pictures or sketches that represent the things depicted.

Throughout the world, from Africa to North America to the islands of New Zealand, prehistoric people left numerous petroglyphs (Fig. 1-2), which are carved or scratched signs or simple figures on rock. Many of the petroglyphs are pictographs, and some may be ideographs, or symbols to represent ideas or concepts (Fig. 1-3). A high level of observation and memory is evidenced in many prehistoric drawings. In an engraved reindeer antler found in the cave of Lorthet in southern



1–2. Found carved and sometimes painted on rocks in the western United States, these petroglyphic figures, animals, and signs are similar to those found all over the world.

1–3. Fremont rock painting from San Raphael Swell, c. 2000–1000 BCE. The Fremont people lived in southern Utah.

1–4. Engraved drawing on a deer antler, c. 15,000 BCE. This prehistoric image is shown in a cast made by rolling the antler onto clay. 23 x 46 cm



The Paleolithic artist developed a tendency toward simplification and stylization. Figures became increasingly abbreviated and were expressed with a minimum number of lines. By the late Paleolithic period, some petroglyphs and pictographs had been reduced to the point of almost resembling letters.

The cradle of civilization

Until recent discoveries indicated that early peoples in Thailand may have practiced agriculture and manufactured pottery at an even earlier date, archaeologists had long believed that the ancient land of Mesopotamia, “the land between rivers,” was the cradle of civilization. Between the Tigris and Euphrates Rivers, which flow from the mountains of eastern Turkey across the land that is now Iraq and into the Persian Gulf, there lies a flat, once-fertile plain whose wet winters and hot, dry summers proved very attractive to early human culture. Here, early humans ceased their restless nomadic wanderings and established a village society. Around 8000 BCE, wild grain was planted, animals were domesticated, and agriculture began. By the year 6000 BCE, objects were being hammered from copper; the Bronze Age was ushered in about 3000 BCE, when copper was alloyed with tin to make durable tools and weapons. The invention of the wheel followed.

The leap from village culture to high civilization occurred after the Sumerian people arrived in Mesopotamia near the end of the fourth millennium BCE. The origin of the Sumerians—who settled in the lower part of the Fertile Crescent before 3000 BCE—remains a great mystery. As vital as the technologies developed in Mesopotamia were for the future of the human race, the Sumerians’ contribution to social and intellectual progress had even more impact upon the future. The Sumerians invented a system of gods headed by a supreme deity named Anu, who was the god of the heavens. An intricate system of god-human relationships was developed. The city emerged, with the necessary social order for large numbers of people to live together. But of the numerous inventions in Sumer that launched people onto the



France (Fig. 1–4), the scratched drawings of deer and salmon are remarkably accurate. Even more important, however, are two diamond-shaped forms with interior marks, which imply an early symbol-making ability. The early pictographs evolved in two ways: first, they were the beginning of pictorial art—the objects and events of the world were recorded with increasing fidelity and exactitude as the centuries passed; second, they formed the basis of writing. The images, regardless of whether the original pictorial form was retained, ultimately became symbols for spoken-language sounds.

path of civilization, the invention of writing was perhaps the most significant, bringing about an intellectual revolution that had a vast impact upon social order, economic progress, and technological and future cultural developments.

The history of Mesopotamia records waves of invaders who conquered the peoples living there. The culture established by the Sumerians conquered the invaders in turn, and the sequence of ruling peoples who dominated Mesopotamia during its long history include Akkadians, Assyrians, Babylonians, and Chaldeans. Persians from the west and Hittites from the north also conquered the area and spread Mesopotamian civilization beyond the Fertile Crescent.



1-5



1-6

The earliest writing

Religion dominated life in the Mesopotamian city-state, just as the massive ziggurat, a stepped temple compound, dominated the city. Its vast, multistory brick temples were constructed as a series of recessed levels, becoming smaller toward the top of the shrine. Inside, priests and scribes wielded enormous power, as they controlled the inventories of the gods and the king and ministered to the magical and religious needs of the people. Writing may have evolved because this temple economy had an increasing need for record keeping. The temple chiefs consciously sought a system for recording information.

In human memory, time can become a blur, and important facts are often forgotten. In Mesopotamian terms, such important facts might include the answers to questions like: Who delivered their taxes in the form of crops? How much food was stored, and was it adequate to meet community needs before the next harvest? As even these relatively simple questions show, an accurate continuum of knowledge became imperative if the temple priests were to be able to maintain the order and stability necessary in the city-state. One theory holds that the origin of visible language evolved from the need to identify the contents of sacks and pottery containers used to store food. Small clay tags were made that identified the contents with a pictograph, and the amount with an elementary decimal numbering system based on the ten human fingers.

The earliest written records are tablets that apparently list commodities by pictographic drawings of objects accompanied by numerals and personal names inscribed in orderly columns (Figs. 1-5 and 1-6). An abundance of clay in Sumer made it the logical material for record keeping, and a reed stylus sharpened to a point was used to draw the fine, curved lines of the early pictographs. The clay mud tablet was held in the left hand, and pictographs were scratched in the surface with the wooden stylus. Beginning in the top right corner of the tablet, the lines were written in careful vertical columns. The inscribed tablet was then dried in the hot sun or baked rock-hard in a kiln.

1-5. Early Sumerian proto-cuneiform using a mnemonic or ideographic writing system where signs resemble concrete objects, pictographic tablet, c. 3100 BCE. This archaic pictographic script contained the seeds for the development of writing. Information is structured into grid zones by horizontal and vertical division.
4.5 x 4.3 cm

1-6. Archaic tablet fragment from the late fourth millennium BCE. The drilled hole denotes a number, and the pictographs represent animals in this transaction of sheep and goats.
4 x 4 cm



1-7



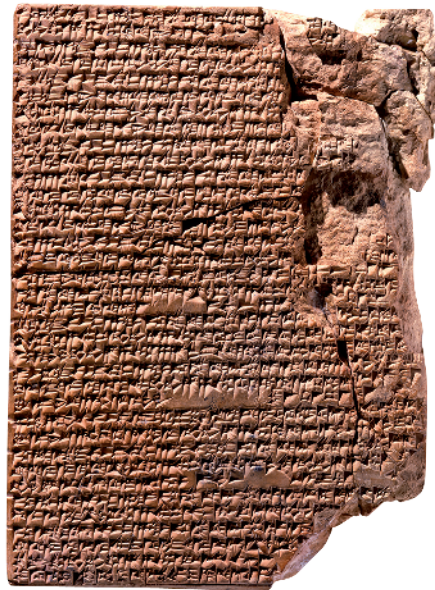
1-8



1-9



1-10



1-11



1-12



1-14



1-13

1-7. Cuneiform tablet from Umma, c. 2050 BCE. Three workers are paid three bundles a day. The total for six days is fifty-four bundles of reed. 3.8 x 3.2 cm

1-8. Cuneiform tablet from Drehem, 2040 BCE. Abbashaga, Shu-Ma, the governor of Kazulla, provides 198 sheep and 162 goats the first time and 41 sheep and 82 female goats the second time. 3.8 x 3.2 cm

1-9. Ur III period, dated to Amar-Sin (2039 BCE) in Sumerian. Balanced silver account of Ur-Dumuzi, the merchant. 15.1 x 10 cm

1-10. Old Babylonian (c. 1850 BCE) in Akkadian. A chapter of the Epic of Gilgamesh. Gilgamesh and his friend go to fell the cedars of Lebanon. 22.6 x 17 cm

1-11. Old Babylonian (c. 1850 BCE) in Akkadian. The world's oldest cookbook, a collection of recipes for dishes for the royal palace or the temple. 16.4 x 11.8 cm

1-12. Middle Babylonian, dated Shagarakti-Shunash (1245–1233 BCE). Balanced account of seed. 8.6 x 6 cm

1-13. Old Babylonian (ca. 1800 BCE). Mathematical school tablet showing how to calculate the diagonal of a square. This predates Pythagoras by 1,200 years. 7.2 cm diameter

1-14. The Blau monument, early Sumerian, third quarter, fourth millennium BCE. Etched writing and carved relief figures are combined on this early shale artifact. 7.6 x 16 cm

This writing system underwent an evolution over several centuries. Writing was structured on a grid of horizontal and vertical spatial divisions. Sometimes the scribe would smear the writing as his hand moved across the tablet. Around 2800 BCE scribes turned the pictographs on their sides and began to write in horizontal rows, from left to right and top to bottom. This made writing easier, and it made the pictographs less literal. About three hundred years later, writing speed was increased by replacing the sharp-pointed stylus with a triangular-tipped one. This stylus was pushed into the clay instead of being dragged through it.

The characters were now composed of a series of wedge-shaped strokes rather than a continuous line drawing (Figs. **1-7 through 1-13**). This innovation radically altered the nature of the writing; pictographs evolved into an abstract sign writing called cuneiform (from the Latin for “wedge-shaped”).

While the graphic form of Sumerian writing was evolving, its ability to record information was expanding. From the first stage, when picture-symbols represented animate and inanimate objects, signs became ideographs and began to represent abstract ideas. The symbol for sun, for example, began to represent ideas such as “day” and “light.” As early scribes developed their written language to function in the same way as their speech, the need to represent spoken sounds not easily depicted arose. Adverbs, prepositions, and personal names often could not be adapted to pictographic representation. Picture symbols began to represent the sounds of the objects depicted instead of the objects themselves. Cuneiform became rebus writing, which is pictures and/or pictographs representing words and syllables with the same or similar sound as the object depicted. Pictures were used as phonograms, or graphic symbols for sounds. The highest development of cuneiform was its use of abstract signs to represent syllables, which are sounds made by combining more elementary sounds.

Cuneiform was a difficult writing system to master, even after the Assyrians simplified it into only 560 signs. Youngsters selected to become scribes began their schooling at the *edubba*, the writing school or “tablet house,” before the age of ten and worked from sunrise to sunset every day, with only six days off per month. Professional opportunities in the priesthood, estate management, accounting, medicine, and government were reserved for these select few. Writing took on important magical and ceremonial qualities. The general public held those who could write in awe, and it was believed that death occurred when a divine scribe etched one’s name in a mythical Book of Fate.

Early Sumerian artisans mixed writing with relief images. The Blau monument (Fig. **1-14**) may be the oldest extant artifact combining words and pictures on the same surface. The knowledge explosion made possible by writing was remarkable. Mesopotamians organized libraries that contained thousands of tablets about religion, mathematics, history,



1-15

1-15. Black stone duck weight, c. 3000 BCE. The cuneiform inscription dedicates this weight to the god Nanna by the King of Ur and confirms a weight of five minas. A mina weighed about 0.6 kilograms. 14.5 x 7 cm

1-16. Stele bearing the Code of Hammurabi, which was developed between 1792 and 1750 BCE. Above the densely textured law code, King Hammurabi is shown on a mountaintop with the seated sun god Shamash, who orders the king to write down the laws for the people of Babylon. A graphic image of divine authority as the source for the code becomes powerful visual persuasion. 2.3 x 0.7 m



1-16

law, medicine, and astronomy. There was a beginning of literature as poetry, myths, epics, and legends were recorded on clay tablets. Writing also fostered a sense of history; tablets chronicled with meticulous exactitude the events that occurred during the reign of each monarch. Thousands of commercial contracts and records still remain.

Writing enabled society to stabilize itself under the rule of law. Measurements and weights were standardized and guaranteed by written inscription (Fig. 1-15). Collections of laws, such as the Code of Hammurabi, which was written in the eighteenth century BCE, spelled out crimes and their punishments, thus establishing social order and justice. The Code of Hammurabi is written in careful cuneiform on a 2.5-meter-tall stele, an inscribed or carved stone or slab used for commemorative purposes (Figs. 1-16 and 1-17). The stele contains 282 laws gridded in twenty-one columns. Steles with Hammurabi's reformed law code were erected in the main temple of Marduk in Babylon and other cities. Written in a precise style, the code expressed harsh penalties with clarity and brevity. Some of these commandments include: "a thief stealing from a child is to be put to death"; "a physician operating on a slightly wounded man with a bronze scalpel shall have his hands cut off"; and "a builder who builds a house that falls and kills the owner shall be put to death."

Mesopotamian visual identification

Two natural by-products of the rise of village culture were the ownership of property and the specialization of trades or crafts. Both made visual identification necessary. Cattle brands and proprietary marks were developed so that ownership could be established and the maker of pottery or other objects identified in case problems developed or superior quality inspired repeat purchases. A means of identifying the author of a clay cuneiform tablet certifying commercial documents and contracts and proving the authority of religious and royal proclamations was needed. Mesopotamian cylinder seals provided a forgery-proof method for sealing documents and proving their authenticity (Fig. 1-18). In use for over three thousand years, these small cylinders had images and writing etched into their surfaces. When they were rolled across a damp clay tablet, a raised impression of the depressed design, which became a "trademark" for the owner, was formed. Because the image carved into the round stone appeared on the tablet as a raised flat design, it was virtually impossible to duplicate or counterfeit. Many such stones had a hollow perforation running through them so that they could be worn on a string around the neck or wrist. Since the images could be reproduced, this can be seen as an initial form of printing.

The widely traveled Greek historian Herodotus (c. 484–c. 425 BCE) wrote that each Babylonian wore a cylinder seal on a cord around the wrist, like a bracelet. Prized as ornaments, status symbols, and unique personal signatures, cylinder seals were even used to mark a damp clay seal on the house door when the occupants were away, to indicate whether burglars had entered the premises.

1-17. Detail of the Code of Hammurabi, c. 1800 BCE. Whether pressed into clay or carved into stone as shown here, Mesopotamian scribes achieved a masterful control and delicacy in their writing and arrangement of the strokes in the partitioned space.

1-18. Stamp-cylinder seal ("the Tyszkiewicz seal"), Hittite, 1650–1200 BCE. Combining decorative ornamentation with figurative images, this most likely portrays a ritual, possibly with a sacrificial offering on the right. It has both an image on the side, for rolling, and an image on the bottom, for stamping. Because it allows images to be reproduced, the cylinder seal can be seen as a precursor to printing. 5.8 x 2.2 cm

1-19 and 1-20. Persian stamp seal, c. 500 BCE. Incised into precious pale blue quartz called chalcedony in a gold mount, this seal, with its symmetrical design of a pair of heraldic beasts locked in combat, probably belonged to a member of the royal family or the high priesthood. 3.4 x 3.1 cm

Cutters of cylinder and stamp seals developed great skill and a refined sense of design. The earliest seals were engraved with simple pictures of kings, a line of cattle, or mythic creatures. Later, more narrative images developed; for instance, one god would present a man (probably the seal's owner) to another god, or a man would figure prominently in fighting a battle or killing a wild animal. In the later Assyrian period, a more stylized and heraldic design approach developed north of Mesopotamia. Stories of the gods were illustrated, and animals were shown engaged in battle (Figs. **1-19** and **1-20**).

The last glory of Mesopotamian civilization occurred during the long reign of King Nebuchadnezzar (c. 634–561 BCE) in the city-state of Babylon. But in 538 BCE, after less than a century of great power during which Babylon, with nearly a million inhabitants, became the richest city in the world, Babylon and Mesopotamia fell to the Persians. Mesopotamian culture began to perish as the region became a province first of Persia, then of Greece, and finally of Rome. By the time of the birth of Christ, great cities such as Babylon had been abandoned, and the ziggurats had fallen into ruins. The dawning of visible language, the magnificent gift to mankind that was writing, passed forward to Egypt and Phoenicia. The Egyptians evolved a complex writing based on pictographs, and the Phoenicians replaced the formidable complexity of cuneiform with simple phonetic signs.

Egyptian hieroglyphs

By the time King Menes unified the land of Egypt and formed the First Dynasty around 3100 BCE, a number of Sumerian inventions had reached Egypt, including the cylinder seal, architectural designs of brick, decorative design motifs, and the fundamentals of writing.



1-17



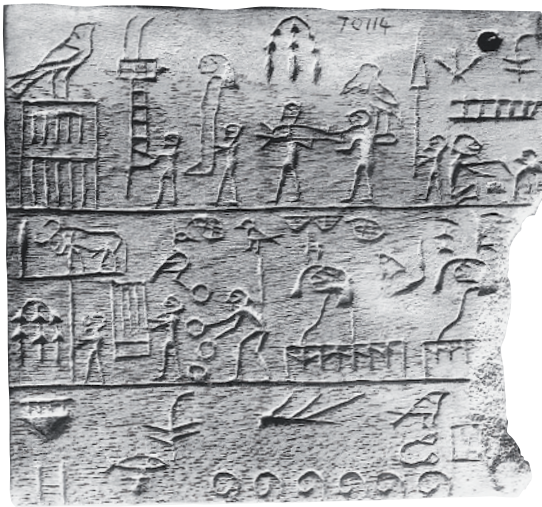
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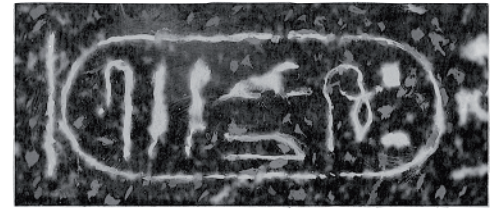
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1-20



1-21



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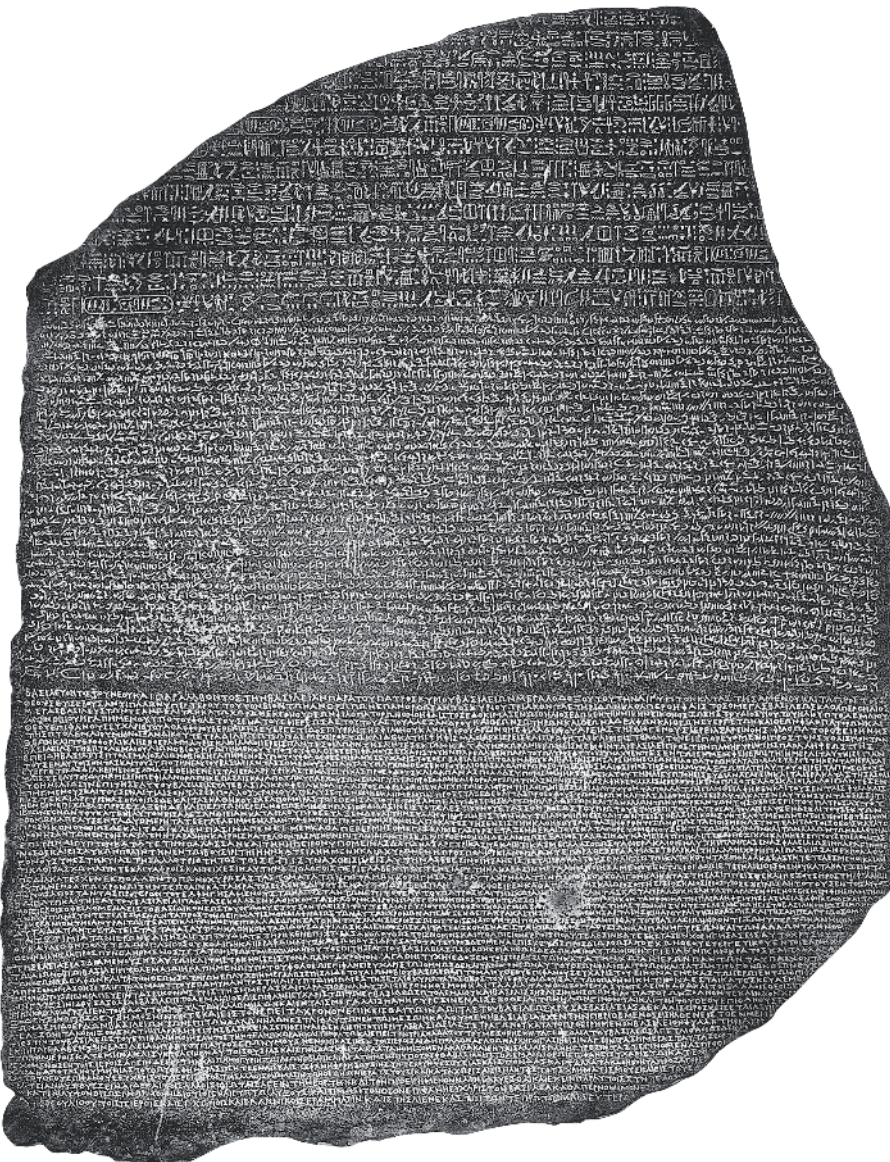
1-21. Ivory tablet of King Zet, First Dynasty. This five-thousand-year-old tablet is perhaps the earliest known example of the Egyptian pictographic writing that evolved into hieroglyphics. 45.5 x 49 cm

1-22. The Rosetta Stone, c. 197–196 BCE. From top to bottom, the concurrent hieroglyphic, demotic, and Greek inscriptions provided the key to the secrets of ancient Egypt. 114.4 x 72.3 cm

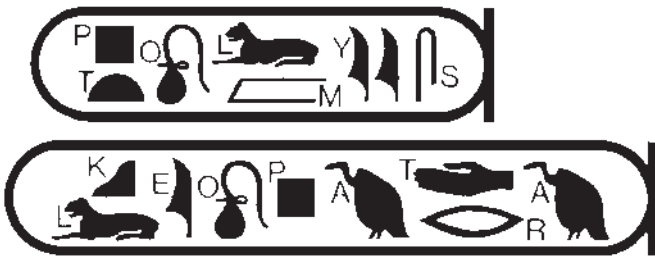
1-23. Details of the Rosetta Stone showing the name *Ptolemy* in hieroglyphics (top), in demotic script (center), and as the Greek word *Ptolemaios* (bottom).

1-24. Alphabet characters placed beside each hieroglyph in the cartouches of Ptolemy and Cleopatra demonstrate the approximate phonetic sounds deciphered by Champollion.

1-25. These Egyptian hieroglyphs illustrate the rebus principle. Words and syllables are represented by pictures of objects and by symbols whose names are similar to the word or syllable to be communicated. These hieroglyphs mean “bee,” “leaf,” “sea,” and “sun.” As rebuses (using the English language) they could also mean “belief” and “season.”



1-22



1-24



1-25

Unlike the Sumerians, whose pictographic writing evolved into abstract cuneiform, the Egyptians retained their picture-writing system, called hieroglyphics (Greek for “sacred carving,” after the Egyptian for “the god’s words”), for almost three and a half millennia. The earliest known hieroglyphs (Fig. 1-21) date from about 3100 BCE, and the last known hieroglyphic inscription was carved in 394 CE, many decades after Egypt had become a Roman colony. The last people to use this language system were Egyptian temple priests. They were so secretive that Greek and Roman scholars of the era believed hieroglyphs were nothing more than magical symbols for sacred rites.

For nearly fifteen centuries, people looked with fascination upon Egyptian hieroglyphs without understanding their meaning. Then, in 1798, Napoleon conducted an expedition to Egypt in an effort to sever the English land route to India. In August 1799, his troops were digging a foundation for an addition to the fortification in the Egyptian town of Rosetta, which they were occupying. A black slab was unearthed bearing an inscription in two languages and three scripts: Egyptian hieroglyphics, Egyptian demotic script, and Greek (Fig. 1-22). This decree had been written in 197 or 196 BCE after a great council of Egyptian priests met to commemorate the ascension of Pharaoh Ptolemy V (c. 210–180 BCE) to the throne of Egypt nine years earlier. Scholars realized that the inscription was probably the same in the three languages, and translation efforts began.

In 1819 Dr. Thomas Young (1773–1829) proved that the direction in which the glyphs of animals and people faced was the direction from which hieroglyphics should be read and that the cartouche for Ptolemy occurred several times (Fig. 1-23). A cartouche, an oval frame around the glyph of an important figure, is also the French word for “bullet,” the frame’s shape.

The major deciphering of the Rosetta Stone hieroglyphs was done by Jean-François Champollion (1790–1832). He realized that some of the signs were alphabetic, some were syllabic, and some were determinatives (signs that determined how the preceding glyphs should be interpreted). Realizing that the hieroglyphs often functioned as phonograms and not simply pictographs, Champollion was able to sound out the name of Ptolemy. This breakthrough happened in 1822, after Champollion was given a copy of an inscription on an obelisk, a tall, geometric, totem-like Egyptian monument. As Champollion studied its hieroglyphs, he was surprised to see the cartouche of Ptolemy, which he had deciphered earlier. Champollion assigned sounds to the three glyphs found in both words: those of *p*, *o*, and *l*. Then he patiently sounded out the others until he had a dozen hieroglyphic translations (Fig. 1-24). Armed with this new knowledge, he proceeded to decipher the cartouche for Alexander the Great.

Champollion gathered all the cartouches he could find from the Greco-Roman era and quickly translated eighty, building a large vocabulary of glyphs in the process. After his death at age forty-two, Champollion’s *Egyptian Dictionary* and *Egyptian Grammar* were both published. His progress toward translating hieroglyphics enabled other nineteenth-century Egyptologists to unlock the mysteries of Egyptian history and culture silently preserved in hieroglyphics.

Hieroglyphics consisted of pictograms that depicted objects or beings. These were combined to designate actual ideas, phonograms denoting sounds, and determinatives identifying categories. When the early Egyptian scribes were confronted with words difficult to express in visual form, they devised a rebus, using pictures for sounds, to write the desired word (Fig. 1-25). (The American designer Paul Rand cleverly utilized the rebus system in his 1981 IBM poster [see Fig. 20-18].) At the same time they designated a pictorial symbol for every consonant sound and combination of consonants in their speech. Even though they never developed signs for the connecting sounds, combining the various glyphs produced a skeletal form for every word. By the time of the New Kingdom (1570–1085 BCE) this remarkably efficient writing system had more than seven hundred hieroglyphs, over one hundred of which remained strictly visual pictographs, or word-pictures. The remainder had become phonograms. Because the Egyptian language contained so many homonyms (such as, for example, a pool of water and the game of pool), determinatives were used after these words to ensure that the reader correctly interpreted them.

Hinew, for example, could refer to a liquid measure or to neighbors. In the former case it was followed by the glyph for beer pot; in the latter by glyphs for a man and a woman. Presenting far more possibilities than cuneiform, hieroglyphics were used for historical and commercial documents, poetry, myths, and epics, and they addressed geography, science, astronomy, medicine, pharmacy, the concept of time, and other topics.

Ancient Egypt clearly represents the early phases of Western civilization as we know it today. Greek culture received much of its knowledge from the Egyptians. Our use of visual symbols originated with the Egyptians; from them we inherited the zodiac, the scales of justice, and the use of animals to represent concepts, cities, and people. In Greece, the owl symbolized Athena, and the image of an owl on a Greek coin indicates that it was minted in Athens. Today we have the American eagle, the Atlanta Falcons, the Carolina Gamecocks, and the dove symbolizing peace. Graphic designer and historian Lance Hidy writes, "Our cultural debt to the idolatry of pagan Egypt was largely expunged from history by Christian revisionists."

The ancient Egyptians had an extraordinary sense of design and were sensitive to the decorative and textural qualities of their hieroglyphs. This monumental visible language system was ubiquitous. Hieroglyphs were carved into stone as raised images or incised relief (Fig. 1–26), and color was often applied. These covered the interior and exterior of temples and tombs. Furniture, coffins, clothing, utensils, buildings, and jewelry all bore hieroglyphs with both decorative and inscriptional purposes. Frequently, magical and religious values were ascribed to certain hieroglyphs. The hieroglyph *ankh*, a cross surmounted by a loop (see Fig. 1–31), had modest origins as the symbol for a sandal strap. Because of phonetic similarity it gained meaning as a symbol for life and immortality and was widely used as a sacred emblem throughout the land.

The design flexibility of hieroglyphics was greatly increased by the choice of writing direction. One started from the direction in which the living creatures were facing. The lines could be written horizontally or vertically, so the designer of an artifact or manuscript had four choices: left to right horizontally; left to right in vertical columns; right to left horizontally; and right to left in vertical columns. Sometimes, as demonstrated in the schematic of the sarcophagus of Aspalta (Fig. 1–27), these design possibilities were combined in one work.

Papyrus and writing

The development of papyrus, a paper-like substrate for manuscripts, was a major step forward in Egyptian visual communications. In ancient times the *Cyperus papyrus* plant grew along the Nile in shallow marshes and pools. Egyptians made extensive use of this plant, whose 4.5-meter stems grew up out of the water. They used papyrus flowers for garlands at the temples; roots for fuel and utensils; and stems as the raw material for sails, mats, cloth, rope, sandals, and, most importantly, papyrus.

In his *Natural History*, Roman historian Pliny the Elder (23–79 CE) tells how papyrus was made. After the rind was peeled away, the inner pith of the stems was cut into longitudinal strips and laid side by side. A second layer of strips was then laid on top of the first layer, at right angles to it. These two layers were soaked in the Nile River and then pressed or hammered until they were a single sheet—apparently, the glutinous sap of the papyrus stem acted as an adhesive. After drying in the sun, sheets were smoothed with an ivory or stone polisher. If such flaws as spots, stains, or spongy areas appeared, the faulty sheet would be peeled apart and remade. Eight different papyrus grades were made for uses ranging from royal proclamations to daily accounting. The finished sheets had an upper surface of horizontal fibers called the *recto* and a bottom surface of vertical fibers called the *verso*. The tallest papyrus sheets measured 49 centimeters, and up to twenty sheets would be pasted together and rolled into a scroll, with the *recto* side facing inward.

As in Sumer, knowledge was power, and the scribes gained significant authority in Egyptian society. Learning to read and write the complex language took many years, and the profession of scribe was highly respected and brought many privileges, not the least of which was exemption from taxation.

The wooden palette used by the scribe was a trademark identifying the carrier as being able to read and write (Fig. 1–28). The example shown is 32.5 centimeters long. One end has at least two depressions, to hold black, red, and sometimes other ink cakes. With a gum solution as a binder, carbon was used to make black ink and ground red ocher to make red ink. These were dried into cakes similar to contemporary watercolor blocks, and a wet brush would then be rubbed onto the cake to return the ink to a liquid state for writing. A slot in the middle of the palette held the brushes, which were made from rush stems. The stem tips were cut on an angle and chewed by the scribe to separate the fibers into a brush.

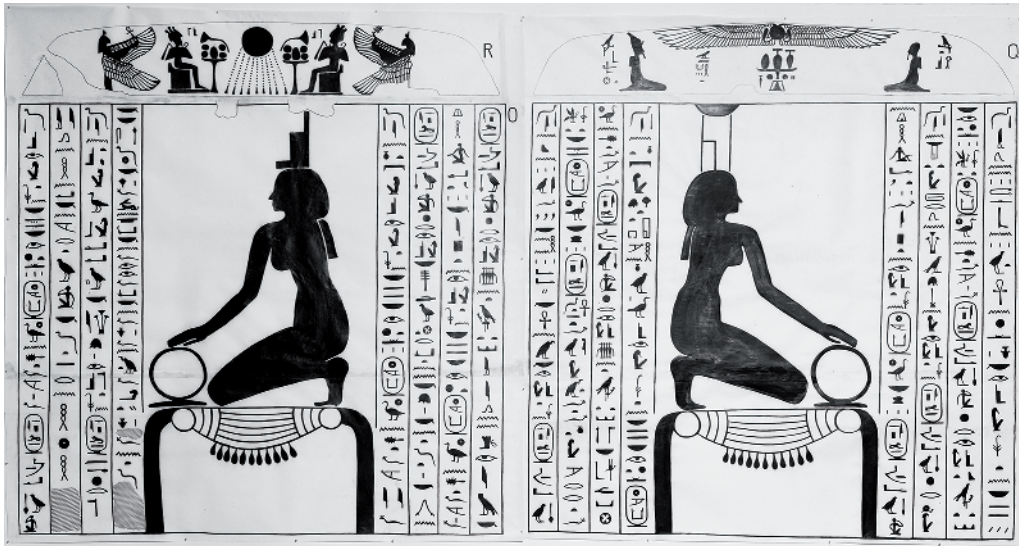
Holding the scroll with his left hand, the scribe would begin at the outer right edge and write a column of hieroglyphs from top to bottom, writing column after column as shown in the mummy shroud fragment of Tuthmosis III (Fig. 1–29). This hieroglyphic book handwriting evolved from the monumental form—the scribes simplified the inscriptional hieroglyphs from a carefully constructed picture to a quickly drawn gesture.

By 1500 BCE priests had developed a cursory *hieratic* (from the Greek for "priestly") script, a pen stroke simplification of the hieroglyphic book hand, for use in religious writings. The earliest hieratic script differed from the hieroglyphs only in that the use of a rush pen, instead of a pointed brush, produced more abstract characters with a terse, angular quality. An even more abstract script called *demotic* (from the Greek word for "popular") came into secular use for commercial and legal writing by the year 400 BCE.



1-26

1-26. False door of Sitinteti, Old Kingdom, Sixth Dynasty, 2323–2150 BCE. Tomb of the Lady Sat-tety-lyn. In contrast to the raised images in the center, the hieroglyphs are carved into the surface and contained in a mathematical grid of carved lines. 116.5 x 79.7 cm



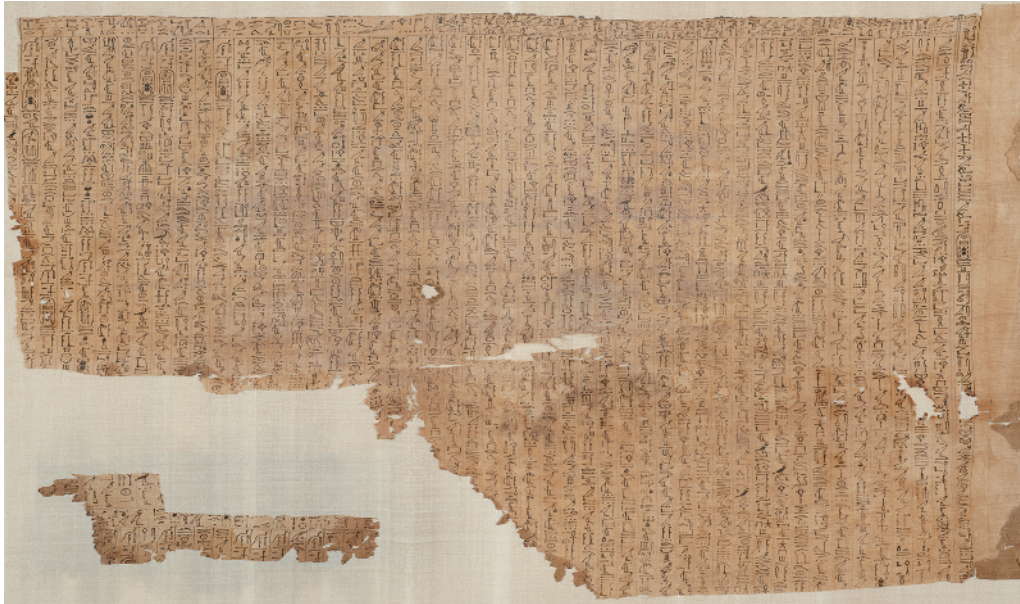
1-27

1-27. Drawing of the Sarcophagus of Aspalta. King of Nubia (Sudan), c. 593–568 BCE. The inscriptions carved into this granite sarcophagus demonstrate the flexibility of hieroglyphics.

1-28. Egyptian scribe's palette with an inscription in hieratic script. 32.5 x 4.2 cm



1-28



1-29

1-29. Mummy shroud fragment of Tutankhamun, c. 1450 BCE. Written hieroglyphs were simplified, but they maintained their pictographic origin. 63.5 x 111 cm

1-30. The hieroglyph depicted the Old Kingdom palette, the drawstring sack for dried ink cakes, and a reed brush holder. The changes in this glyph demonstrate the evolutionary process (from left to right): hieroglyph, 2700 BCE; hieroglyphic manuscript hand, c. 1500 BCE; hieratic script, c. 1300 BCE; and demotic script, c. 400 BCE.



1-30

The hieroglyph for *scribe* was a pictorial image of the very early brush holder, palette, and sack of ink. The characters accompanying the photograph of these artifacts show this evolution (Fig. 1–30). Hieratic and demotic scripts supplemented rather than supplanted hieroglyphs, which continued in use for religious and inscripational purposes.

The first illustrated manuscripts

The Egyptians were the first people to produce illustrated manuscripts in which words and pictures were combined to communicate information. A preoccupation with death and a strong belief in the afterlife compelled the Egyptians to evolve a complex mythology about the journey into the afterlife. Through inventive myth and legend, the inexplicable was explained and faced. A final judgment would ultimately allow the deceased either to be admitted into the company of the gods or to suffer eternal damnation. The prayer of every Egyptian was to be cleansed of sin and found worthy at the final judgment. Scribes and artists were commissioned to prepare funerary papyri, called the Chapters of Coming Forth by Day. A nineteenth-century scholar named them the Book of the Dead, and this name is generally used today.

The Book of the Dead was a third phase in the evolution of funerary texts. Beginning with the pyramid of Unas (c. 2345 BCE), the walls and passages of the pyramids were covered with the *pyramid texts* of hieroglyphic writings, including myths, hymns, and prayers relating to the godlike pharaoh's life in the afterworld. This practice was followed by the *coffin texts*: all surfaces of the wooden coffin and/or stone sarcophagus were covered with writings and often illustrated with pictures of possessions for use in the afterlife. Thus, high officials and noblemen could now enjoy the benefits of funerary texts even though the cost of a pyramid was beyond their means.

The dawning of the New Kingdom, around 1580 BCE, saw papyrus manuscripts come into use for funerary texts. Even citizens of fairly limited means could afford to have at least simple papyri made to accompany them on the journey into the afterlife. From pyramid to coffin to papyri—this evolution toward cheaper and more widespread use of funerary texts paralleled the increasingly democratic and secular aspects of Egyptian life.

The Book of the Dead was written as a first-person narrative by the deceased and placed in the tomb to help triumph over the dangers of the underworld. The artists who illustrated the Book of the Dead papyri were called upon to foretell what would occur after each subject died and entered the afterlife (Fig. 1–31). Magical spells could enable the deceased to turn into powerful creatures; passwords to enter various states of the underworld were provided, and the protection of the gods was sought. Wonderful futures were illustrated. One might dwell in the Fields of Peace, ascend into the heavens to live as a star, travel the sky with the sun god Ra in his solar boat, or help Osiris rule the underworld.

The journey into the underworld is depicted as a chronological narrative. The final judgment is shown in the Papyrus of Ani (Fig. 1–32). The jackal-headed god Anubis, keeper of the dead, prepares to weigh Ani's heart against a feather symbolizing truth to see if he is "true of voice" and free from sin. Thoth, the ibis-headed scribe of the gods and keeper of the magical arts, is poised with a scribe's palette to write the verdict. To the right, the monster Ammit, the devourer of the dead, stands poised for action should Ani fail to pass the moment of judgment. An imaginative visual symbol, Ammit has the head of a crocodile, the torso of a lion, and the hindquarters of a hippopotamus. A register across the top shows twelve of the forty-two gods who sit in judgment. Addressing each god in turn, a "negative confession" denies a host of sins: "I have not done evil; I have not stolen; I have not killed people; I have not stolen food." Then, Ani speaks to his heart: "Set not thyself to bear witness against me. Speak not against me in the presence of the judges, cast not your weight against me before the Lord of the Scales." Upon being found virtuous, his soul spends the night after death traveling into the underworld and arrives at his "coming forth by day" on the following morning.

A consistent design format evolved for the illustrated Egyptian papyri. One or two horizontal bands, usually colored, ran across the top and bottom of the manuscript. Vertical columns of writing separated by ruled lines were written from right to left. Images were inserted adjacent to the text they illustrated. Images often stood on the lower horizontal band, the columns of text hanging down from the top horizontal band. Frequently, a horizontal frieze register ran along the top of a sheet. A sheet was sometimes divided into rectangular zones to separate text and images. The functional integration of text and image was aesthetically pleasing, for the dense texture of the brush-drawn hieroglyphs contrasted splendidly with the illustration's open spaces and flat planes of color.

In the earlier versions of the Book of the Dead, the scribe designed the manuscript. If it was to be illustrated, blank areas were left that the artist would fill in as best he could. The vignettes gradually became more important and dominated the design. The artist would draw these illustrations first. Then the scribe would write the manuscript, trying to avoid awkward blank spaces and sometimes writing in the margins if the illustrator did not leave adequate room for the text. Skilled artists were retained to create the images, but the scribes who did this work were not scholars. Often, passages were omitted for purposes of layout or through poor workmanship. The manuscript illustrations were drawn in simplified contour lines using black or brown ink, and then flat color was applied using white, black, brown, blue, green, and sometimes yellow pigments. Perhaps the extensive use of luminous blue and green was a response to the intense blue of the Nile and the rich green of the foliage along its banks, a cool streak of life winding through vast reaches of desert.

1-31. Detail from the Papyrus of Hunefer, c. 1370 BCE. Hunefer and his wife are worshipping the gods of Amenta. The sun god Ra bears an ankh symbol on his knee, and Thoth holds the *udjat*, the magical protective “sound eye” of the god Horus.



1-31

1-32. Vignette from the Papyrus of Ani, c. 1420 BCE. Ani, a royal scribe, temple accountant, and granary manager from Thebes, and his wife, Thuthu, arrive for his final judgment. Anubis, a jackal-headed god, is depicted weighing the heart of Ani on a scale against a feather, which represents the law.



1-32

Wall paintings and papyri used similar design conventions. Men were shown with darker skin color than women, and important persons were in larger scale than less important persons. The human body was drawn as a two-dimensional schematic. The frontal body had arms, legs, and head in profile. The stylized eye reads simultaneously as both profile and frontal image. Even though flatness was maintained, Egyptian artists were capable of sensitive observation and recording of details.

One could commission a funerary papyrus or purchase a stock copy and have one's name written in appropriate places. The buyer could select the number and choice of chapters, the number and quality of illustrations, and the length. Excepting the 57-meter great Turin Papyrus, the Book of the Dead scrolls ranged from 5 meters to 28 meters long and were from 30 centimeters to 45 centimeters tall. Toward the final collapse of Egyptian culture, the Book of the Dead often consisted merely of sheets of papyrus, some of which were only a few inches square.

Egyptian visual identification

The Egyptians used cylinder seals and proprietary marks on such items as pottery very early in their history. They inherited both forms of identification from the Sumerians. From prehistoric times the scarab beetle was considered sacred or magical. In the Twelfth Dynasty, carved scarab emblems (Figs. 1–33 and 1–34) were commonly used as identification seals. These oval stones, usually of a glazed steatite, were sculpted likenesses of the scarab beetle. The flat underside, engraved with a hieroglyphic inscription, was used as a seal. Sometimes the scarab was mounted as a signet ring. Although every Egyptian of any standing had a personal seal, little evidence of scarabs actually being used for sealing has survived. Possibly the communicative function was secondary to the scarab's value as talisman, ornament, and symbol of resurrection. The creator sun god, Khepri, linked to the scarab beetle, was sometimes depicted rolling the sun across the sky, just as the living scarab or dung beetle forms a ball of dung and rolls it across the sand to its burrow to be eaten over the following days. Ancient Egyptians apparently believed that the scarab beetle laid its eggs in this ball and related the scarab's life cycle to the cyclical processes of nature, especially the daily rebirth of the sun. An amulet called a heart-scarab was placed over the heart of a mummy. Its engraved undersurface had a brief plea to the heart not to act as a hostile witness in the Hall of Justice of Osiris.

Ancient Egyptian culture survived for over three thousand years. Hieroglyphics, papyri, and illustrated manuscripts are its visual communications legacy. Along with the accomplishments of Mesopotamia, these innovations triggered the development of the alphabet and graphic communications in Phoenicia and the Greco-Roman world.

1–33 and 1–34. Scarab of Ikhnaton and Nefertiti, c. 1370 BCE. This scarab bears the cartouche of Ikhnaton on the side shown. The engraved hieroglyphs of the flat bottom were etched with a bronze needle. 3.2 x 4.4 x 6 cm



1–33



1–34